

“Hey Researchers, there is a problem...”

A Response to “*Hey Players, there is a problem...: On Attribute Inference Attacks against Videogamers*”¹ by Linus Eisele and Giovanni Apruzzese at the University of Liechtenstein.

Written by Magewinter in collaboration with the r/WoW mod team.
Contact: worldofwarcraftsubreddit@gmail.com

Dear reader,

This letter is written in response to a report published on findings gathered in part from our online community space at r/WoW². In this response, we intend to highlight issues with the way this information was gathered, as well as with the conclusions drawn within the paper. The outcome of this study has had a harmful impact on our community, and has eroded the trust between our gaming community and academics involved in user research.

Context

The writers of this letter are the moderation team of a subreddit forum for the game World of Warcraft, with over 2.6 million members in our community. We were approached on January 5th, 2024 by Linus Eisele and Giovanni Apruzzese so that they might post an academic survey on our subreddit.

For a survey to be posted on our subreddit, we require:

- Evidence that the survey is used for legitimate academic research, such as an academic email address provided, names of the researchers, and details of the academic institution they represent.
- Confirmation that the research is confidential, and that no personally identifiable information is given by responders*.
- Evidence that the survey is specific to players of World of Warcraft, and not gaming or MMORPG's in general

**We make an exception for the option for responders to provide an email, either so that they can win a prize, or be contacted further about the study. This must be optional, and was not applicable in this case.*

In addition, we review the content of the survey to ensure that the questions meet our requirements and further confirm - as much as we reasonably can - the legitimacy of the survey. In this instance, the survey

¹ Eisele, L. and Apruzzese, G. (2024) *Hey Players, there is a problem...: On Attribute Inference Attacks against Videogamers*. Available at: <https://web.archive.org/web/20240608230825/https://www.giovanniapruzzese.com/files/papers/cog24/cog24.pdf> (Accessed: 10 June 2024).

² *r/WoW on Reddit*. Available at: <https://www.reddit.com/r/wow/>.

met our criteria for approval, based on information available within the survey provided by the researchers, and the fact that a specific survey had been created for World of Warcraft players.

On the 8th June, five months later, the researchers sent the moderation team a modmail, asking for the results of their study to be approved to post on the subreddit³. It is important to note that this permission was only requested *after* an initial attempt to post this research without our permission had failed - as our automoderator had flagged their post as potential spam. By this time, the researchers had already posted these findings on multiple subreddits, and would go on to post this publicly on 18 subreddits in total⁴.

The report drew conclusions that we, the r/WoW moderation team, were leaving ourselves open to Attribute Inference Attacks, because we had allowed the academic researchers to post a survey to the subreddit.

We were not made aware of the true nature of the research conducted within our community until the findings were posted.

Lack of Informed Consent

Firstly, the survey approval of a moderator was counted in the report⁵, without that moderator's consent. At this point, the moderator who responded to the researchers became a nonconsensual participant in their study.

This consent is not something that can be retroactively gained, as unfortunately, that moderator passed away suddenly in February⁶.

Later, after the moderation team had responded to the publicised report, the researcher was made aware of the death of that moderator on Twitter⁷, yet still chose to publicly share the response of that moderator anyway⁸. We share this now as his response is already public, but consent was never gained by the researcher for the communication between this moderator and themselves to be made public or counted as a metric within the report. We believe this to be in conflict with the IEEE's Code of Ethics section I.1 and II.9 in particular.

[7.8 IEEE Code of Ethics](#)⁹

³ Survey Results post by u/UniLi_MIS. Available at: <https://imgur.com/a/QBi4qJJ>

⁴ Post history of u/UniLi_MIS. Available at: <https://imgur.com/a/V9TFjbC>

⁵ TABLE II: Communities that Facilitate AIA on page 5 of the report: Eisele, L. and Apruzzese, G. (2024) *Hey Players, there is a problem...": On Attribute Inference Attacks against Videogamers*. Available at: <https://web.archive.org/web/20240608230825/https://www.giovanniapruzzese.com/files/papers/cog24/cog24.pdf> (Accessed: 10 June 2024).

⁶ Memorial Post for Late Moderator. Available at:

https://old.reddit.com/r/wow/comments/1bmo16c/in_memory_of_a_beloved_community_member/

⁷ Twitter/X post by @u_magewinter. Available at: https://x.com/u_magewinter/status/1799576895635296703

⁸ Twitter/X post by @g_apru. Originally available in the second linked tweet here:

https://x.com/u_magewinter/status/1799805369981751674 now available here: <https://imgur.com/a/nxlejPK> as the tweet was later deleted.

⁹ (2020) IEEE Code of Ethics. Available at:

<https://www.ieee.org/content/dam/ieee-org/ieee/web/org/about/corporate/ieee-code-of-ethics.pdf> (Accessed: 10 June 2024).

I. To uphold the highest standards of integrity, responsible behavior, and ethical conduct in professional activities.

1. to hold paramount the safety, health, and welfare of the public, to strive to comply with ethical design and sustainable development practices, to protect the privacy of others, and to disclose promptly factors that might endanger the public or the environment;

II. To treat all persons fairly and with respect, to not engage in harassment or discrimination, and to avoid injuring others.

9. to avoid injuring others, their property, reputation, or employment by false or malicious actions, rumors or any other verbal or physical abuses;

The researcher claims that the moderation team were made aware of the true nature of the research paper, but this is not true. The researchers told the moderation team that the paper focused on in-game data privacy, rather than data shared in public forums and via academic surveys. Additionally, after the report was written, the moderators were not contacted directly to be made aware of any of the learning points discussed within the paper - the first contact received after the report was finished was the aforementioned attempt by the researchers to publish the findings on the subreddit publicly, as well as in 17 other subreddits across the Reddit gaming community¹⁰.

Secondly, the participants were not informed of the true nature of the survey until after they had submitted their responses. The “truth” was revealed once participants had completed and sent their survey response, and were even asked not to share the true nature of this survey with others¹¹. As the moderator who approved this survey has since passed away, we cannot verify whether he submitted his responses and saw this page. It is standard practice however not to click ‘submit’ in order to preserve the integrity of the research, as he will likely have clicked through the survey to read the questions, rather than provide considered answers. Regardless, the true nature of an academic survey should not be withheld from the participants until after they have sent their response.

Misrepresentation of the Study’s Findings

The results of this particular study do not paint an accurate picture of the information gained in this research. Firstly, subreddits that did not allow the researchers to post their survey in their communities were not named in the study, only those who were labelled ‘Communities that Facilitate AIA’ in Table II of the report. These communities were labelled as such regardless of whether or not the moderation team had verified the academic legitimacy of the survey, such as had happened in the case of r/WoW.

We believe it is a misrepresentation of the truth to conclude that community moderators who inspected and verified the legitimacy of the research study are just as much facilitators of AIA as those who allow any surveys to be posted with no prior approval, or inactive moderation teams that did not remove the survey posted without explicit permission.

Additionally, the report fails to detail the process by which the authors obtained permission to collect user information. The authors describe that they responded “ethically” and counted the total number of messages sent, without so much as summarising the content of those messages. The authors fail to

¹⁰ Post history of u/UniLi_MIS. Available at: <https://imgur.com/a/V9TFjbC>

¹¹ Twitter/X post by @u_magewinter. Available at: https://x.com/u_magewinter/status/1799576649484185939

account for how their own presentation - as legitimate researchers - impacted the verification process and ultimately the user data that was gathered.

In the case of r/WoW, the survey itself contained an academic email and details of the academic institution that could be cross referenced against the names of the researchers to ensure their legitimacy, within our reasonable ability to do so.

We find this omission of important impacting variables and subsequent misrepresentation of the findings to be in conflict with the IEEE code of ethics also:

I. To uphold the **highest standards of integrity**, responsible behavior, and **ethical conduct in professional activities**.

5. to seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, **to be honest and realistic in stating claims or estimates based on available data**, and to credit properly the contributions of others;

Negative Consequences of This Paper

The major consequence of this paper has been an erosion of the trust that previously existed between online spaces such as r/WoW, and those allowed into these spaces to conduct academic research. Here we provide some quotes from the comment section of our initial post made in response to the report¹²¹³:

"Cultural anthropologists that focus on online subcultures are going to be furious with this. It's going to poison the well against legitimate research approaches. Why should anyone believe a person that says they're doing an academic study now?"

*"So we want you to help with an academic survey and the result is that you should not have let us do a survey?
So the result is many subs are just going to not allow any even profession surveys going forward. I get what they are saying but it is just making things much more difficult for people who want to do actual surveys?"*

"You see. If I remember correctly I completed the survey under the assumption that it was being done in good faith. Seeing that it was being conducted in a confidential manner by a reputable institution I shared the information they asked for. When possible I try to participate in surveys like this because I know that the more data available the more accurate it will be. I agree that the way this was conducted and is being presented is unethical. I think that the fact that this "study" was conducted at all shows that the ones conducting it went in with an inherent bias against MMO players. Why choose this demographic to begin with if not to show us as gullible?"

Even if the moderators unwittingly involved in this study were to continue to approve academic studies moving forward, it is undeniable that there will be a portion of the community which would now be unwilling to engage with any study as a direct result of this paper.

¹² r/WoW Moderator Initial Statement on Reddit. Available at: https://www.reddit.com/r/wow/comments/1db5imw/statement_on_a_recent_university_of_liechtenstein/

¹³ Twitter/X post by @u_magewinter. Available at: https://x.com/u_magewinter/status/1799776129282417012

Additionally, the authors acknowledge (see below) that the public report now provides information to potential attackers on which subreddits and online community spaces are most vulnerable to Attribute Inference Attacks, potentially *causing* the issue that the research claims to try to solve. If the intention of the researchers was to better equip and inform community moderators on how they could better prevent AIA within their online spaces, then the findings of the report should have been first shared privately, so that the necessary preventative measures could have been put in place before the report was made public.

"Ethical Statement: We acknowledge that the following information may be helpful for evildoers. However, we favor ethical disclosure, respecting the right to be informed of gamers [29, 30]."

Found on page 3 of the report.

Our Recommendations

We have made clear that we do not believe that the way this study was conducted was the right way of informing communities of their susceptibility to AIA, nor was it the right way to conduct and conclude research gained within our community spaces.

Instead, we recommend the following alternatives for if a future, similar study was to take place:

- A study that asks users about past experiences where they have shared information, rather than asking them to share any information within that survey. For example, rather than a question asking them to link their character's armory page, ask the users if they have ever linked their character's armory page online before.
- Questions asking users whether they would feel comfortable sharing certain types of information, rather than asking for that information.
- In the case of a survey where the researchers intend to reveal the true nature of the study after the questions have been answered, this should be done so before users submit their responses, and with assurance that the responder can exit the questionnaire at that point if they do not want their responses shared in light of this new information.
- A survey that asks moderators questions about the surveys/studies that they typically allow on the subreddit, with informed consent provided by those moderators for their responses to be used in the research paper.
- A survey for moderators that asks their opinion on hypothetical scenarios, rather than orchestrating a real event where the moderators' willingness to allow an actual academic survey to be posted is criticised.

The researchers reached out to us via email after we had responded publicly to their report, and offered to make revisions to the paper to address some of our concerns. They have shared a version of the report with some changes made, which we have been asked not to share. However, as previously mentioned, the moderator who approved their survey in the first place has since passed away, and did not provide *fully informed* consent for either himself nor our subreddit to be used in this study, which in our opinion, is an irreparable flaw in the report.

Action Plan

In light of this report, we as a moderation team have identified ways in which we can introduce additional barriers for those committing AIA to do so in our community. We will not, however, share these steps publicly - for fear of unintentionally creating a guide for those who wish to abuse this system to find a work-around.

With this being said, the research for this report was conducted under legitimate academic pretences - and we *cannot*, and *should not have to*, protect ourselves from genuine academic researchers who hide the true nature of their research until after the research has been submitted. We are now, however, more informed on bad academic practice to be wary of, as well as the IEEE code of ethics and rules around gaining informed consent. This action is taken as a result of this survey, but not as a result of the researchers' findings.

Conclusion

This study by Linus Eisele and Giovanni Apruzzese targeted unpaid community moderators of online video game forums. These researchers sought to use the moderators' nonconsensual participation in their research as a cautionary tale, by posting their findings publicly in the very community spaces they had used for their report. They also did not gain fully informed consent from the subreddit users who were kind enough to respond to their survey.

It may be true that in light of these findings, we will make improvements to the way that we handle academic survey requests to our subreddit (that is, if we allow future surveys to be conducted at all) however gaining this outcome as a result of damaging the trust between academics and the gaming community is not something we want to see celebrated. We especially do not want to see this celebrated in an international academic conference on gaming. This is why we are calling for the [IEEE CoG](#) to reconsider their acceptance of this report to their conference in August.

Signed,

u/Magewinter (Lead moderator of r/WoW)

And members of the moderation team:

u/Oriolexy

u/YourResidentFeral

u/TheArbiterofOribos

u/Jourlen

u/Khadgars_Manager

Glossary of terms:

1. Armory: An online database for World of Warcraft that allows players to view character profiles, gear, achievements, and other in-game information related to the players' characters.
2. Automoderator: A type of software or program used in online forums or communities to automatically perform certain moderation tasks based on pre-set rules, such as removing spam or flagging specific keywords.
3. MMORPG: Short for "Massively Multiplayer Online Role Playing Game;" an online role-playing video game in which a very large number of people participate simultaneously.
4. Moderator: A Reddit user with elevated privileges who is responsible for enforcing rules and managing user interactions within their topic-specific forum.
5. Modmail: Short for "moderator mail," it is a communication system within Reddit that allows users to send messages directly to the moderators. These messages can be read by all moderators of that subreddit, but are not public.
6. r/WoW: Short for "reddit World of Warcraft," it refers to the specific subreddit dedicated to discussions, content, and news related to the popular MMORPG game *World of Warcraft*.
7. Subreddit (Occasionally Shortened to 'sub'): A subsection or community forum within the larger website *Reddit*, focused on a specific topic or theme.